ing revealed strong site fidelity of the birds. Site loyalty in Burrowing Owls has been exhibited in other San Francisco Bay Area relocation projects as well. Examples of Burrowing Owl site fidelity during dislocation or relocation efforts are presented and discussed raising questions regarding these efforts as an effective method of removing Burrowing Owls from proposed development or other sites. A comparison is made between the Burrowing Owl and other bird species, whose tenacity to nesting and wintering sites has been studied with results available in the literature, in order to relate possible implications of site fidelity in Burrowing Owls. With a growing concern for decreasing populations of Burrowing Owls, relocation has become one method of mitigating habitat losses. Site fidelity is an important consideration for developing successful mitigation proposals.

### ECOLOGICAL CONSIDERATIONS FOR MANAGEMENT OF BREEDING BURROWING OWLS IN THE COLUMBIA BASIN

GREEN, G.A. *EBASCO Environmental, 10900 NE 8th Street, Bellevue, WA 98004*. R.G. ANTHONY. *Oregon Cooperative Wildlife Research Unit, Oregon State University, Corvallis, OR 97331*

Burrowing Owls inhabiting the Columbia Basin of Oregon and Washington rely largely on badgers to excavate nest burrows; however, badgers are also a major predator of Burrowing Owl nests. To avoid badger predation through early detection, Burrowing Owls in the Columbia Basin select burrows with good horizontal visibility provided by surrounding short vegetation or, when the average vegetation height is >5 cm by elevated perches. Burrowing Owls will also line their nest burrows with livestock dung, if available, presumably to mask odors of nest occupants from mammalian predators. Burrowing Owls also select sites characterized by a high percentage (40–50%) of bare ground, where prey (*Heteromyid* rodents and ground-dwelling arthropods) populations are presumably high. Abandonment of nest sites tends to occur when distances between nest sites are less than 110 m, an important consideration when placing artificial nest boxes. Furthermore, small nest boxes can become overcrowded by growing broods, often forcing movements of all or part of the brood to auxiliary burrows, increasing the susceptibility of nestlings to predation or abandonment. Therefore, several aspects of Burrowing Owl nesting ecology, including predator avoidance, intraspecific competition, prey selection, and brood development, should be understood before designing a program for managing nesting habitat.

### RECOVERY PLAN FOR THE BURROWING OWL IN CANADA

HJERTAAS, D.G. *Saskatchewan Natural Resources, 3211 Albert Street, Regina, SK, Canada, S4S 5W6*

The population of Burrowing Owls nesting in Canada has been in decline since the mid-1900s. The Burrowing Owl, extirpated from British Columbia, now being reintroduced, is listed as endangered in Manitoba and has experienced major declines in Alberta and Saskatchewan. Habitat loss is considered a significant cause of decline although elevated mortality from pesticides, vehicle collisions and unknown causes is also a major problem. The National Population goal is set at 2700 breeding pairs. Principal management actions recommended in the plan and some results of these efforts will be discussed in three priority groups. Priority 1: 1) Management to reduce mortality and increase productivity on breeding grounds. 2) Protection and management of nesting habitat. Priority 2: 3) Population monitoring. 4) Population management on migration and wintering grounds. Priority 3: 5) Eliminate negative effects of pesticides. Priority 4: 6) Release programs.

### BURROWING OWLS, BIODIVERSITY, AND BOMBS

JAMES, P.C. *Saskatchewan Museum of Natural History, Wascana Park, Regina, SK, Canada S4P 3V7*

The Burrowing Owl is a species of the grasslands and, as such, is coming under increasing pressure from agricultural activity. While not yet an endangered species, it is symptomatic of the increasing global assault against biodiversity by people. The threats to biodiversity are numerous, but all result from the continuing non-sustainable use of the planet's resources. Only 7% of the world's military budget is needed to reverse this. As students of biodiversity, biologists must also become champions of biodiversity.

### OPERATION BURROWING OWL IN SASKATCHEWAN: THE FIRST FIVE YEARS

JAMES, P.C. *Saskatchewan Museum of Natural History, Wascana Park, Regina, SK, Canada S4P 3V7*

Habitat loss is a serious problem for prairie wildlife in Canada. Operation Burrowing Owl was initiated in 1987 as a private stewardship program to protect owl habitat through landowner recognition, to increase awareness of the owl as a threatened species, to conduct an annual census of the Saskatchewan population, and to place nest boxes in areas to facilitate research and breeding. Landowners with owls sign a voluntary agreement to preserve the nesting site for five years. In return, they receive a gate sign, an annual newsletter, and a survey form on which to report the number of owls. As of 1991, the program had a membership of 499, with 647 pairs of owls protected on over 40 000 acres of habitat. However, despite this protection, the population has declined rapidly with 46% of the members no longer having owls on their property. While Operation Burrowing Owl may not have halted this decline, it has considerably raised the awareness of this and other endangered species among farmers.